

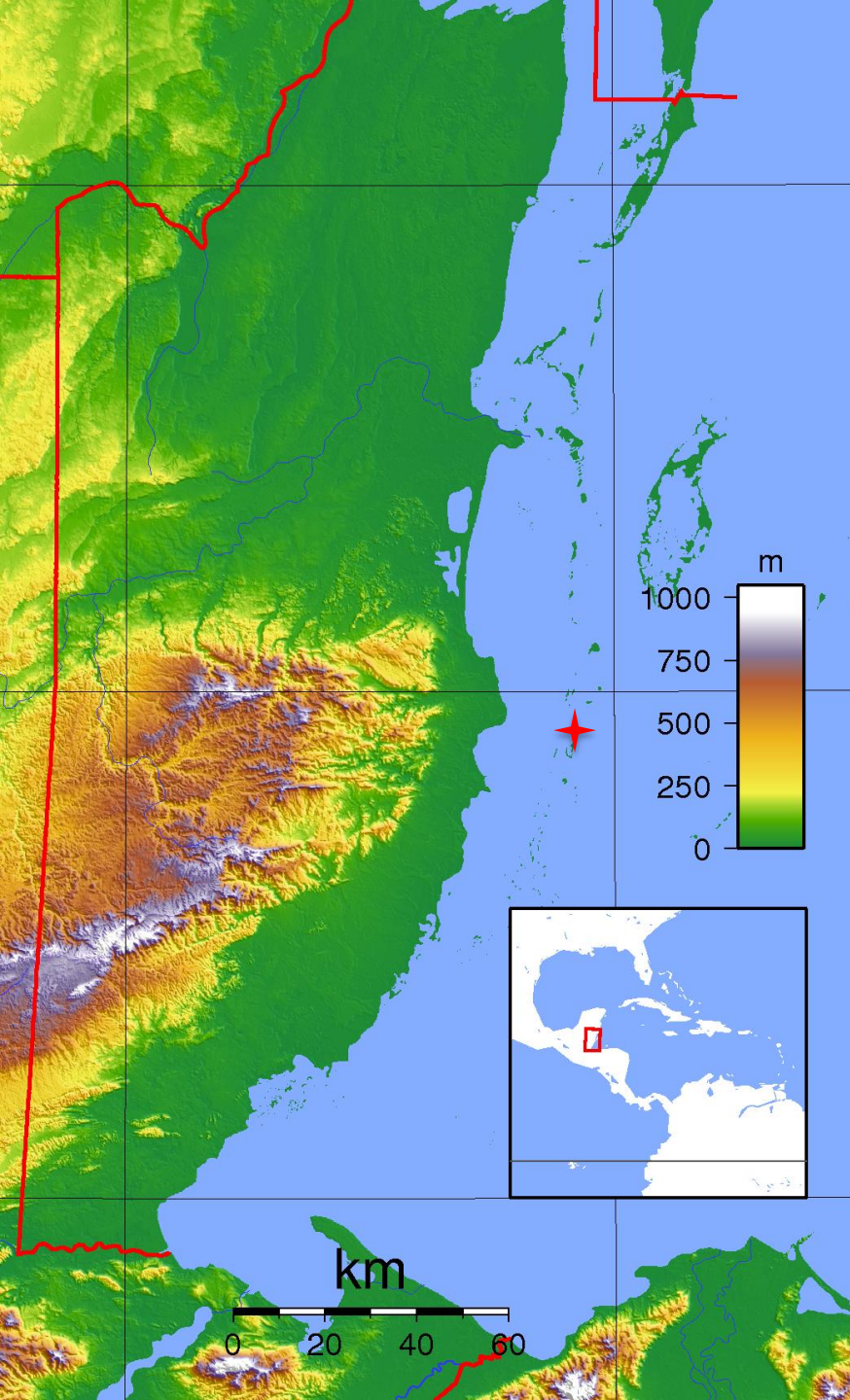
Tropical Biogeoscience in Belize

2nd Informational Meeting

Fall – Winter next year

12 credits





What I mean by “biogeoscience”

- Primarily understanding organisms and their interactions with their environments

“BIO-”

- Understanding organisms’
 - space needs
 - trophic (feeding) styles
 - larval dispersion and success

“GEO-”

- Understanding the Habitat & Time
 - substrate
 - wind and water energy levels
 - nutrient levels
 - disturbance interval

A short field season will be facilitated by...

- Studying

- calcareous (hard, shelled)

- benthic (live on or in the seafloor sediment)

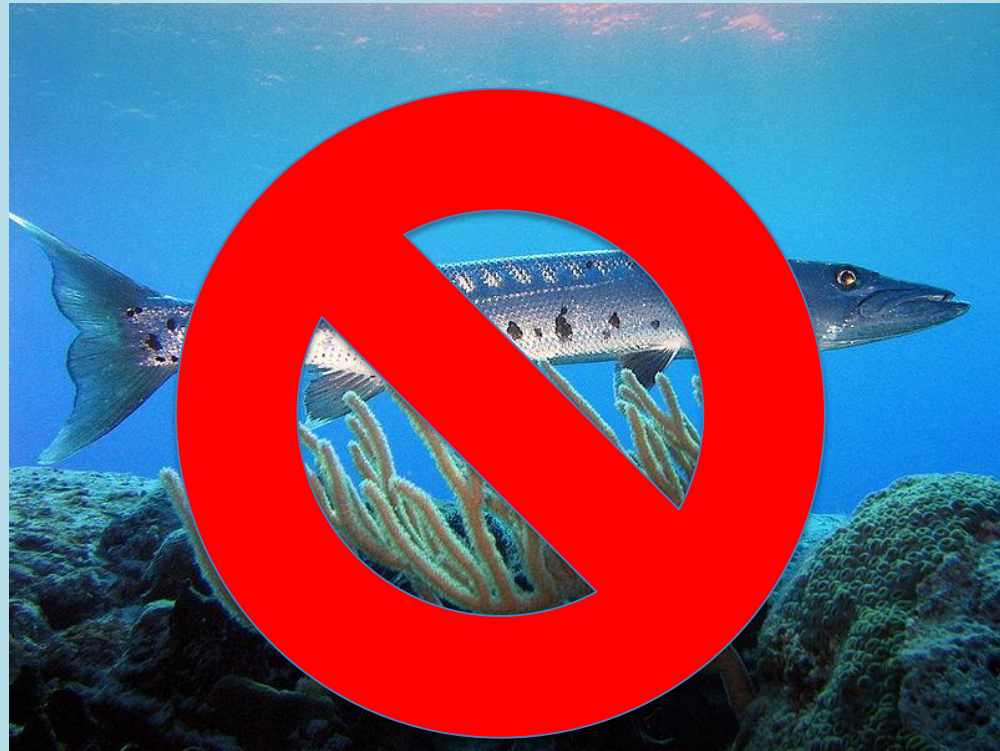
- invertebrates (slower movers or attached)

- this approach is good for long term climatology- thousands to millions of years

You will learn much about
these sorts of things...



but NOT about these sorts of
things...



Coral cayes (like the one on which we will live for 2 weeks) are made up almost entirely of the shelly remains of corals, molluscs, and red & green algae



The main biotopes:

A wide-angle photograph of a coastal scene. In the foreground, there is a wide, flat, greyish-brown area that appears to be a beach or a tidal flat, possibly covered in fine sand or silt. The middle ground shows a shallow, clear turquoise sea with visible seabed patterns. The background is a deep, dark blue ocean extending to a clear, light blue sky. The text "The main biotopes:" is overlaid in white, sans-serif font in the upper-middle part of the image.

Sea Grass





Mangrove



Coral Reefs

Acropora palmata is extinct in many parts of the Caribbean



Nature of Field Work





What we will do:

- shallow seafloor transects & surveys by snorkeling (semi-quantitative) to make a benthic map of biota
- identify (& measure) environmental parameters (satellite view, snorkeling and boat-based observations)



You will be wet all the time

Field & Research Limitations



An aerial satellite-style view of a coastline. The land on the left is green and brown, with a large, irregularly shaped bay or inlet. The water in the bay is a deep blue, while the open ocean to the right is a lighter blue. A single bird is in flight over the open water. In the bottom left corner, there is a scale bar labeled '12.7 km'. In the bottom center, there is copyright information. In the bottom right corner, the 'Google earth' logo is visible. On the right side of the image, there are faint, vertical UI elements from the Google Earth interface, including a compass and a vertical scale bar.

we will be working under the constraints
of weather (esp. wind strength &
direction)

Data SIO, NOAA, U.S. Navy, NGA, GEBCO
© 2012 Cnes/Spot Image
Image NASA

12.7 km

Google earth

we cannot split into groups to go to
different field sites
(because of safety issues of
boat-based field work)





we cannot do the type of science that
requires significant amounts of time
or fancy equipment







- **Field Goals:**
 - to determine how environmental conditions influence the distribution of flora & fauna (and in turn how flora & fauna influence the local environmental conditions)
- **Approach:**
 - Detectives, forensic reasoning
 - as a group, we will learn about the system broadly (directed field learning for 6 days)
 - Focus study on **3 Field Sites** (compare these) for 6 – 8 days

Students in teams of four, each team responsible for one of the 3 field sites, and will determine the work plan for the whole group



Plan:

three sites to compare & contrast, everyone at each site
(probably 2 field days per site during the 2 weeks)



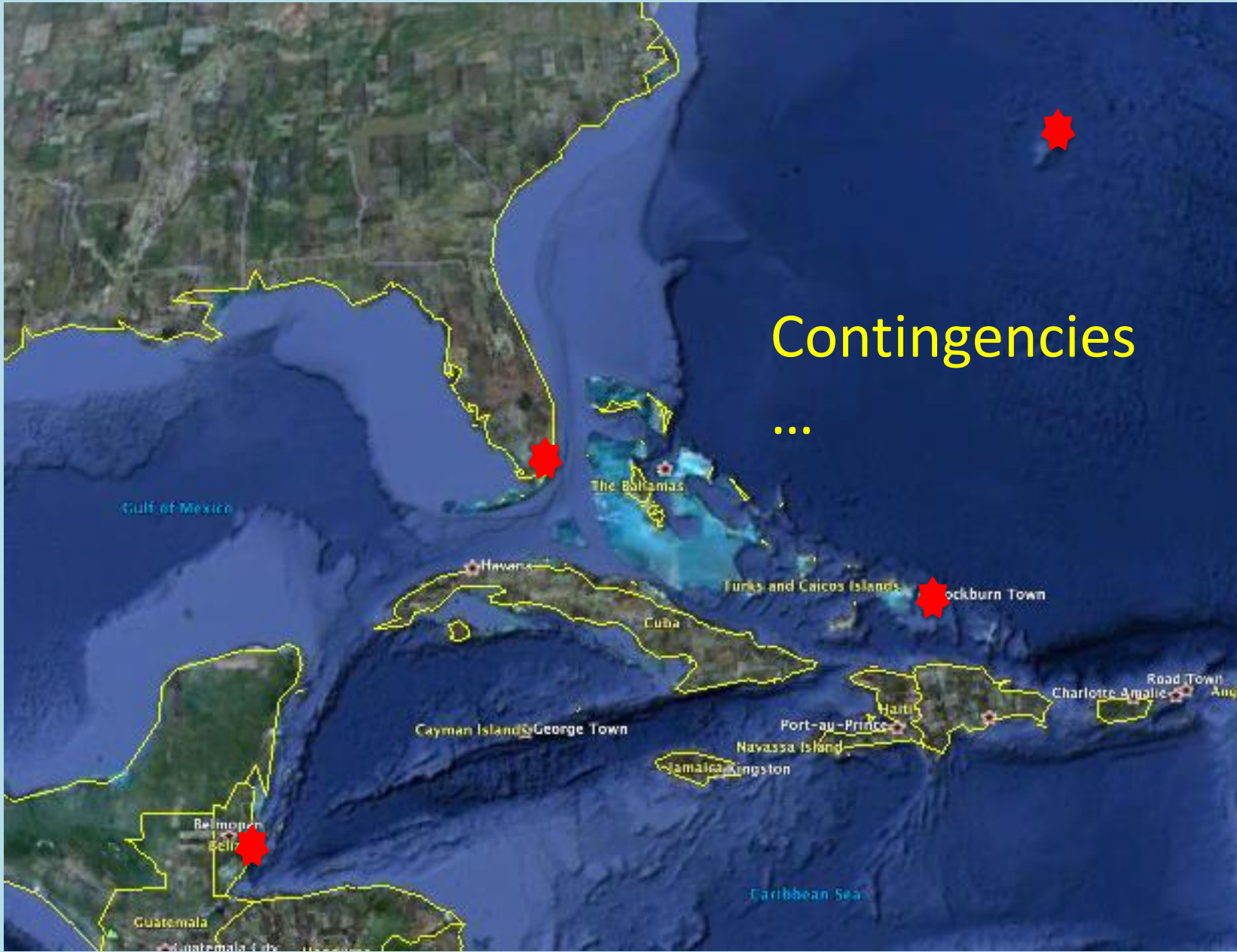
Where we will stay: Tobacco Caye



...not Calabash Caye as originally advertised







Contingencies

...



76 m

Image © 2011 DigitalGlobe

Google earth

imagery Date: 4/10/2005

2004

16°53'53.25" N 88°03'39.84" W elev 2 m

Eye alt 328 m



PARADISE I



76 m

Image © 2011 DigitalGlobe

Google earth

imagery Date: 4/10/2005  2004

16°53'53.25" N 88°03'39.84" W elev 2 m

Eye alt 328 m 



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TOBACCO CAYE



WELCOME TO
GAVIOTA









How we will get there



Arrive Belize City by specified time







MAKING TROPIC AIR CARGO THE BEST WAY TO GET YOUR AIR MAIL

FedEx

TROPIC AIR CARGO







Business

Fall Term GEOL 232 (6 creds. MWF)

Survey Course on Marine Biogeoscience

Intro to basic Oceanography

Intro to Caribbean Climate & Environment

Intro to Marine Ecology

Intro to Issues: bleaching, mangrove habitat destruction, ocean acidification, etc.

Basic Taxonomy of marine invertebrates

Team Background Preparation

Teams of 3 students will be responsible for background research on something topical that we cannot study in the field, and then present that work during an evening in Belize

Pool time with the TA (will need snorkel gear for Fall Term)

Winter Break:

2-weeks of field work at Tabacco Caye

Sunday December 2 to Saturday December 14

Winter Term:

Group will meet once a week, get reports together
(put findings into context – library research)

Final: Public Presentations of Findings

Criteria for participation:

12 spots (probably....)

At least one 200-level laboratory course in
Biology, Chemistry or Geology

Strong Competence (and confidence) in
swimming

Strong interest in the natural environment

Participants' responsibilities

Participant Costs:

Roundtrip Airfare to Belize City from wherever you will be over Winter Break

(currently running \$800 from MSP)

-must arrive at a **specified time** in Belize City

Possibly airfare (on a charter) from Belize City to Dangriga (\$125 roundtrip)

Program's responsibilities

- Room & Board while in residence on Tobacco Caye
- Group field equipment, expenses and fees
- boat transfer to/from the island from Dangriga
- permits, marine reserve fee, lectures by local experts, boat hire, etc.

Snorkel gear — mask & snorkel, fins, and possibly a shortie or dive skin.

The Geo Dept has gear to loan out; you need to bring personal supplies, possibly a prescription mask if you wear glasses/contacts (?)

- \$250 and up



You bring:



